Atchafalaya River

and

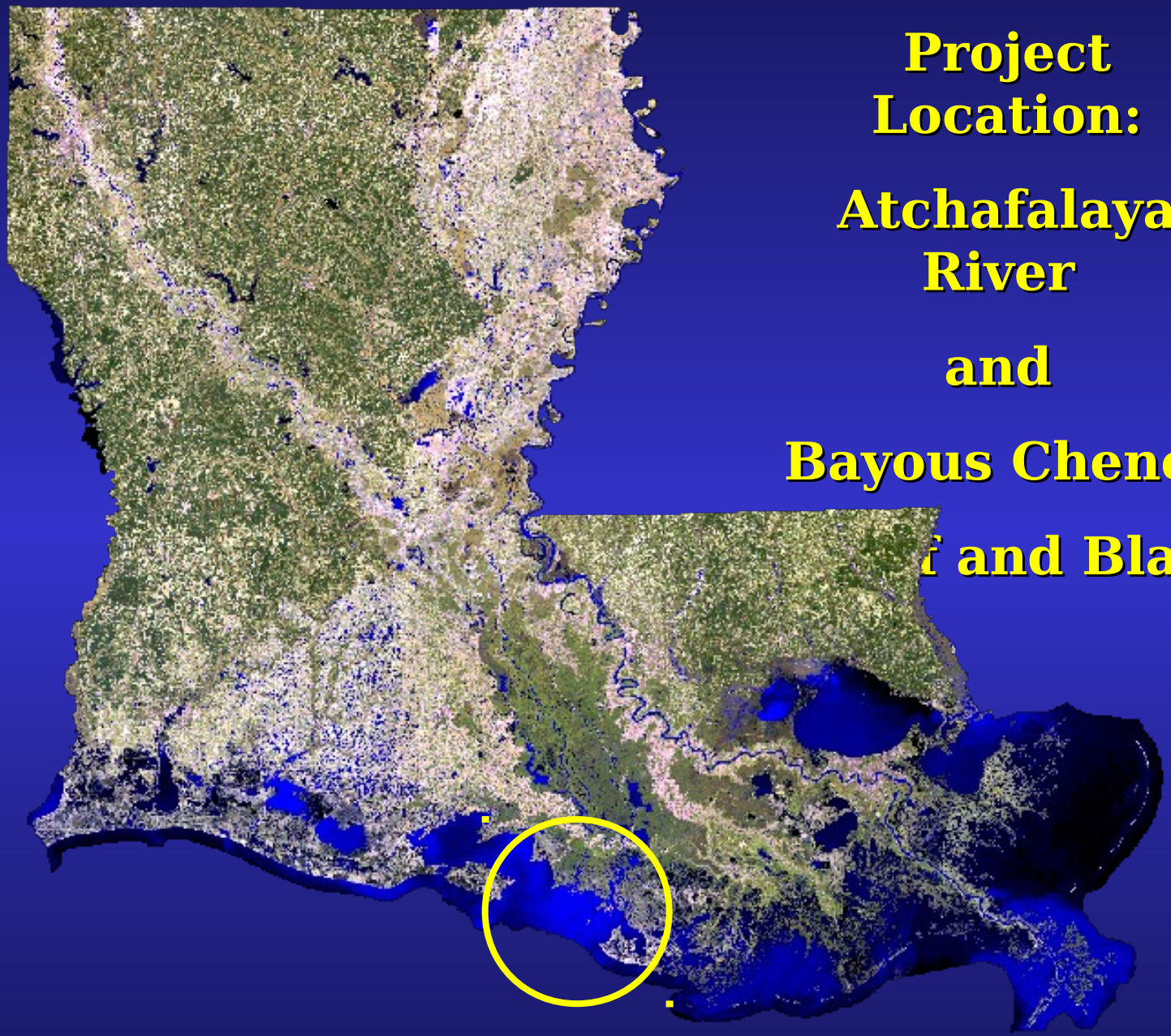
Bayous Chene, Boeuf and Black

DESCRIPTION

The Atchafalaya River and Bayous Chene, Boeuf and Black, Louisiana Project, provides a 20-ft by 400-foot channel between the Gulf of Mexico and rig fabrication and oil service facilities in the Amelia area east of Morgan City

PURPOSE

To provide an adequate navigation outlet for the major marine fabrication and repair facilities which build mobile offshore petroleum drilling rigs, and to provide shelters of refuge, for those rigs and related floating equipment from Gulf Storms



Project Location:

Atchafalaya River

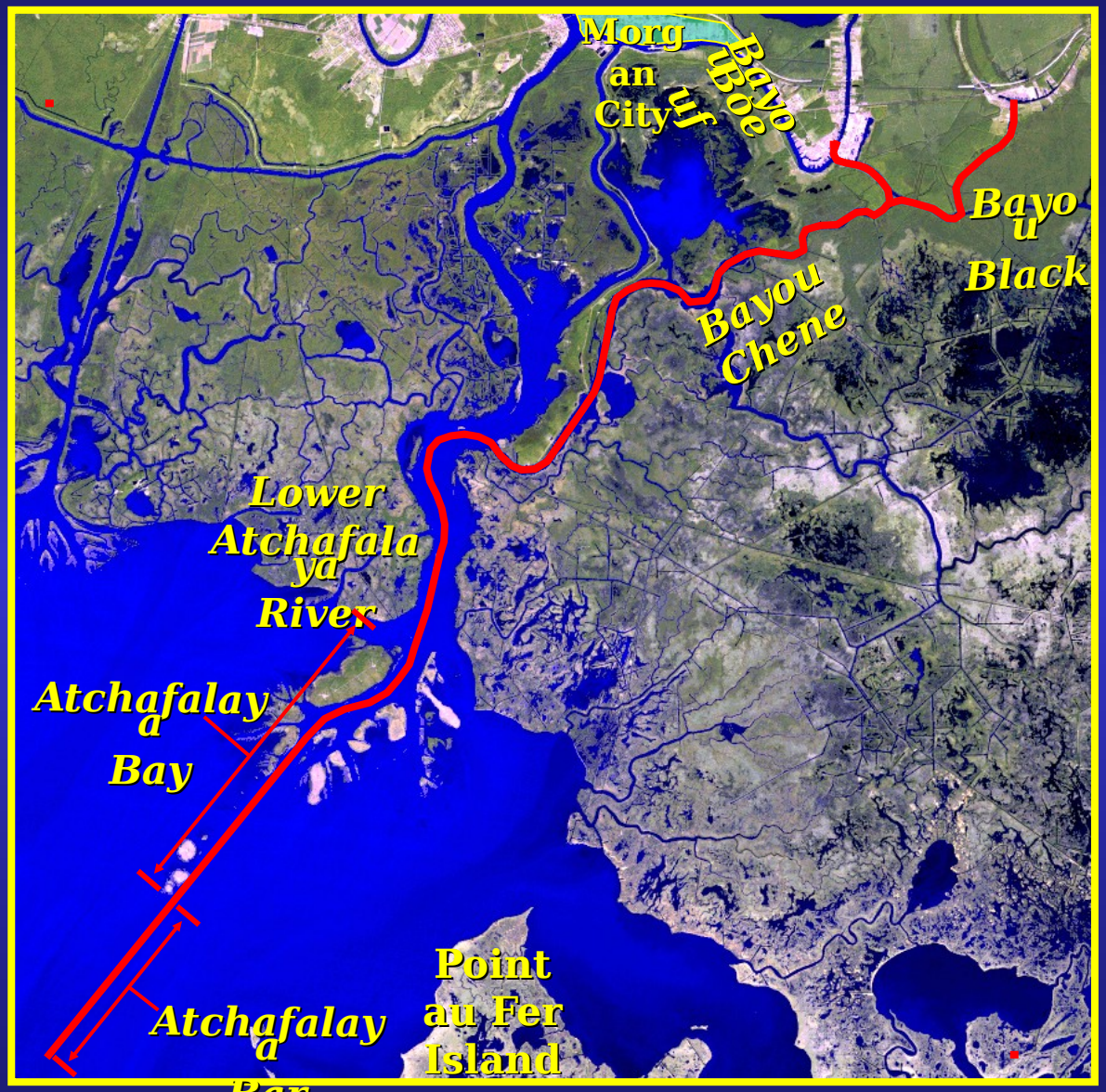
and

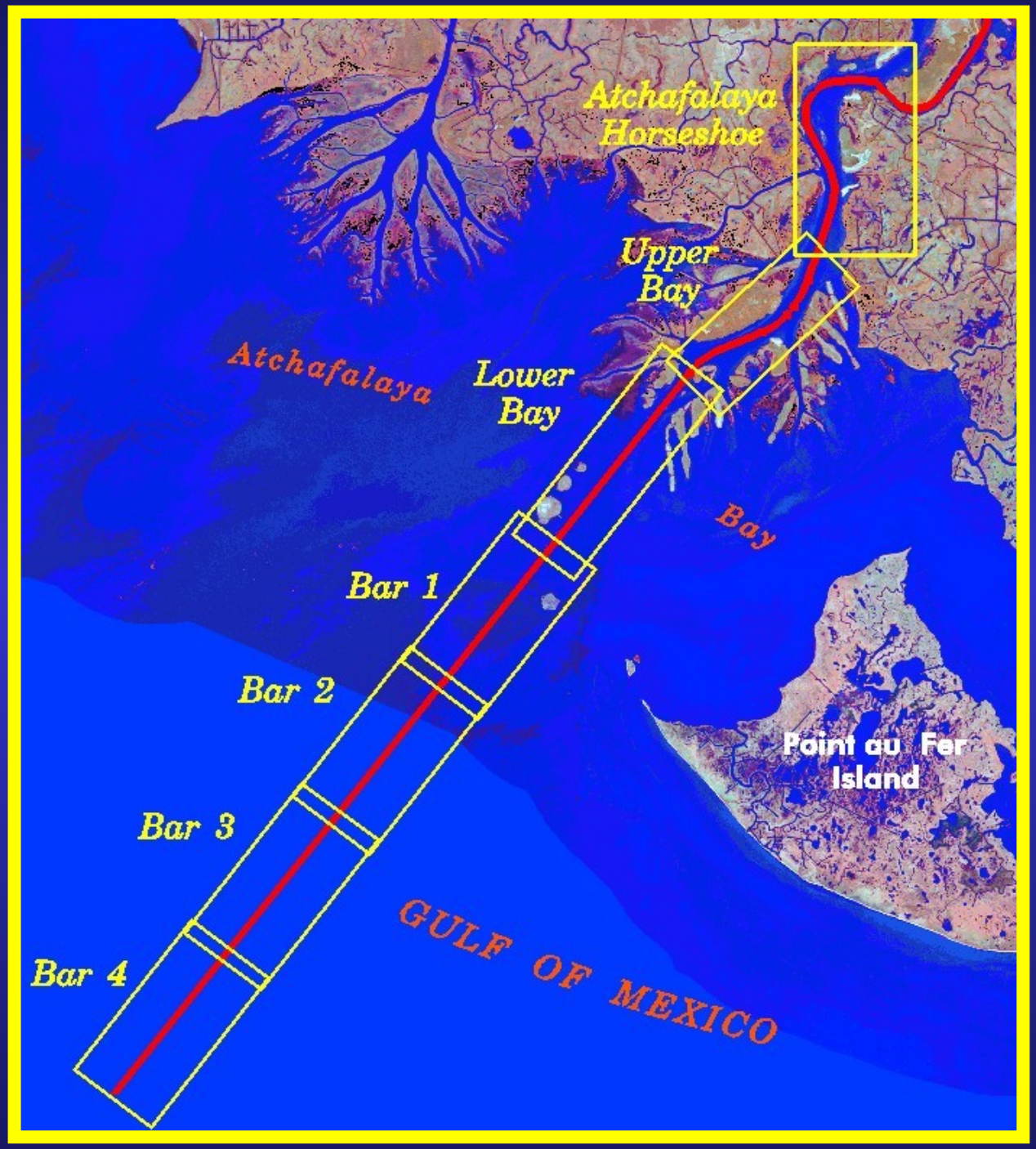
Bayous Chene,

and Black

Red
River
Mississippi River
OLD
RIVER
COMPLE
X
Atchafalay
a River

Atchafalaya River Bayous Chene, Boeuf & Black





BAR CHANNEL REACH

ATCHAFALAYA RIVER BAR CHANNEL –

Fluff is a fluid mud that returns or forms in the bar channel as quickly as 6 to 8 weeks following channel maintenance.

Fluff in the bar channel has been a long term problem.

Although historical data does not exist on fluff density so we cannot empirically demonstrate changes, institutional knowledge of the project suggests that fluff density and thickness may be increasing.

Historically, bar channel maintenance dredging occurred in a restorative mode, but the frequency of the maintenance did not keep the channel fluff free.

ACTIVITIES TO ADDRESS FLUFF

1. Increased number of bar channel contracts in FY 2001.
2. In May 2001, initiated a study with the Engineering Research and Development Center (ERDC) in Vicksburg, MS.
3. In January 2002, performed demonstration agitation dredging in bar channel with a hopper dredge.
4. Constructed additional advanced maintenance test sections (constructed test sections between August 2002 and February 2003).
5. Increased Pumping Distance from 2,500 ft off centerline of channel to 5,000 ft off centerline of channel since August 2002 to present and changed to west side disposal
6. Conducted Value Engineering (VE) Study in November 2003.

Activity 1:

Increased number of bar channel contracts in FY 2001.

Objective:

Remove fluff from the channel

Result:

Fluff was removed from the channel; however, increasing the number of bar channel contracts did not keep the channel free of fluff for a significant period of time. The cost of the project also increased.

Activity 2:

Initiated a study with ERDC in Vicksburg, MS.

Objective:

1. Learn what processes cause fluff.

2. Determine if moving disposal areas to the west side of the channel, or

   another area, would improve channel operability.

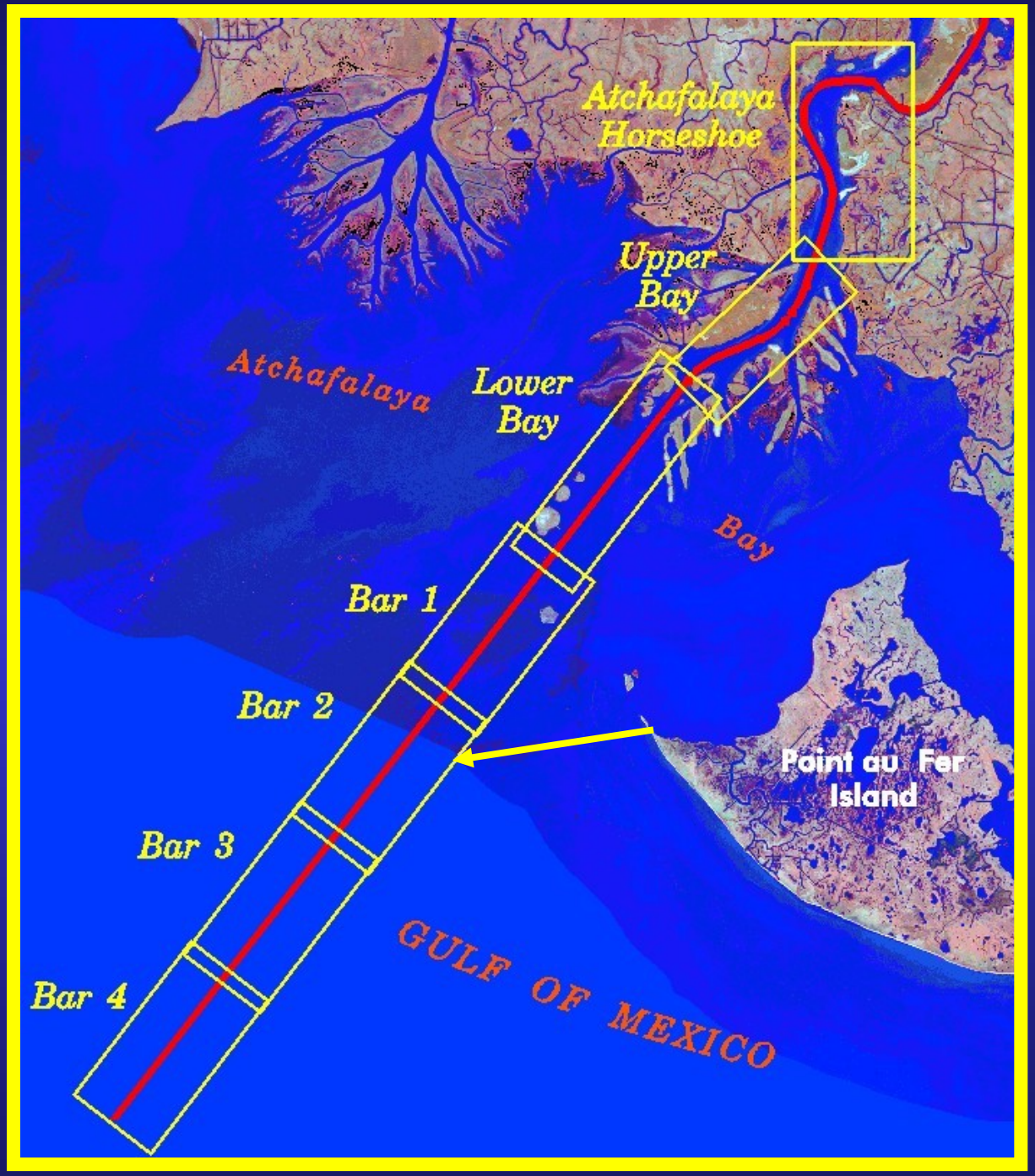
3. Determine if deepening the channel would improve operability.

4. Determine the navigable depth of the channel and if fluff is navigable.

5. Formulate alternatives, possibly structural, to improve operability.

Activity 2:
Initiated a study with ERDC in Vicksburg, MS.

Result:
1. Causes of fluff – Numerous sediment sources, high energy system,
salt/fresh water interface location.
2. Relocate disposal – Some benefits; however, did not significantly
decrease maintenance costs or improve channel operability.
3. Deepening – Some benefits; however, did not significantly
decrease maintenance costs or improve channel operability.
4. Navigable depth – First two feet of fluff appear to be navigable based on
European Criteria, additional study with more sophisticated
technology needed, also need to identify specific types of



PROPOSED STRUCTURAL ALTERNATIVE

Activity 3:

Performed demonstration agitation dredging in bar channel with a hopper dredge.

Objective:

Determine if hopper dredges are effective in moving fluff in the Atchafalaya River Bar Channel.

Result:

The hopper dredge did move the material effectively; however, within a week of dredging fluff was already reforming in

Activity 4:

Constructed additional advanced maintenance test sections.

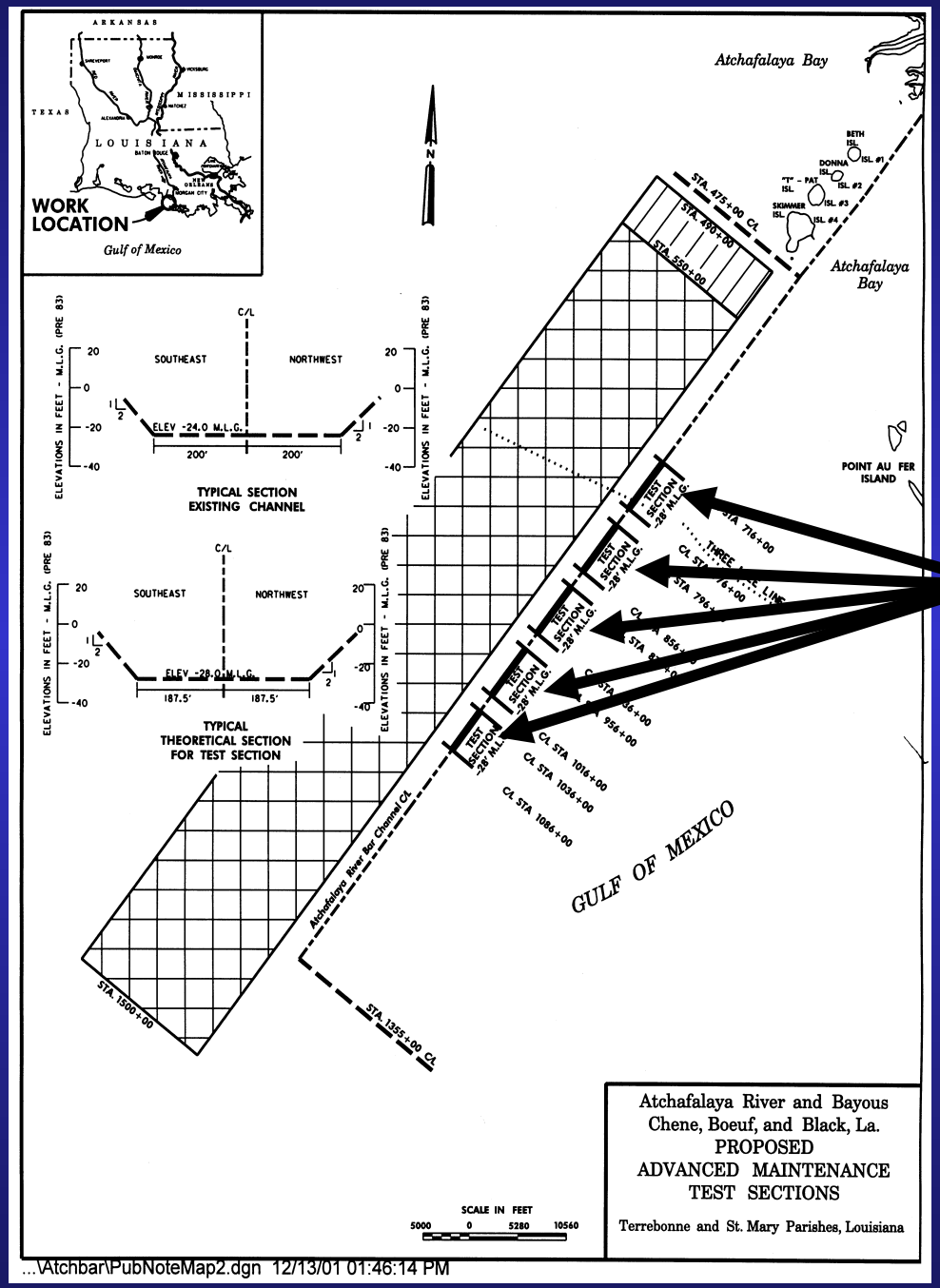
Objective:

Determine if deepening channel would lower top of fluff.

Determine if deepening channel would significantly increase the time period between dredging events.

Result:

These measures delayed the return of fluff, but this delay was not significant relative to decreasing maintenance costs or increasing channel reliability (fluff free bar channel).



Test Sections

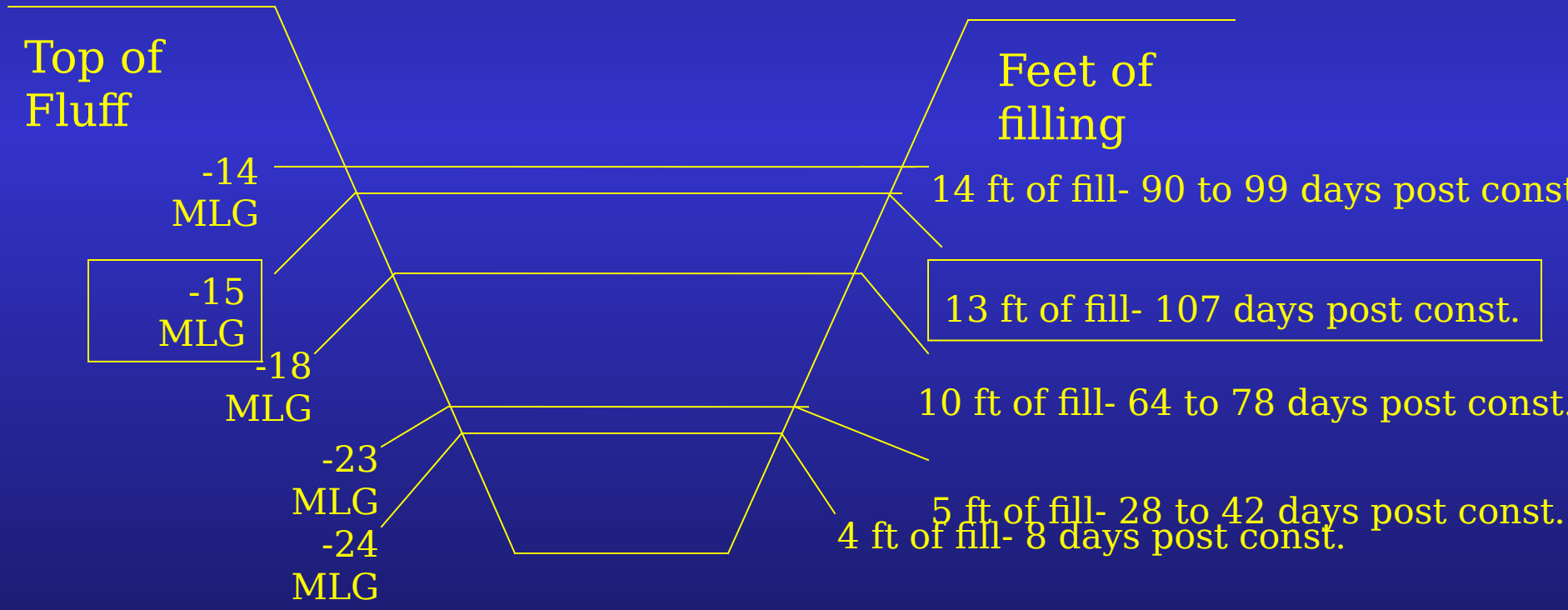
Four test sections were 6,000 ft x –28 ft.

One test section was 5,000 ft x –28 ft.

Survey Monitoring of Completed Test Section

Test Section Located between

Station 876+00 and 936+00


Top of Fluff
-14 MLG
-15 MLG
-18 MLG
-23 MLG
-24 MLG
Feet of filling
14 ft of fill- 90 to 99 days post const
13 ft of fill- 107 days post const.
10 ft of fill- 64 to 78 days post const.
5 ft of fill- 28 to 42 days post const.
4 ft of fill- 8 days post const.

-28 MLG Construction Depth

Construction completed 11 February 2003

Activity 5:

Increased pumping distance from 2,500 ft to 5,000 ft off centerline of channel, and changed to west side disposal.

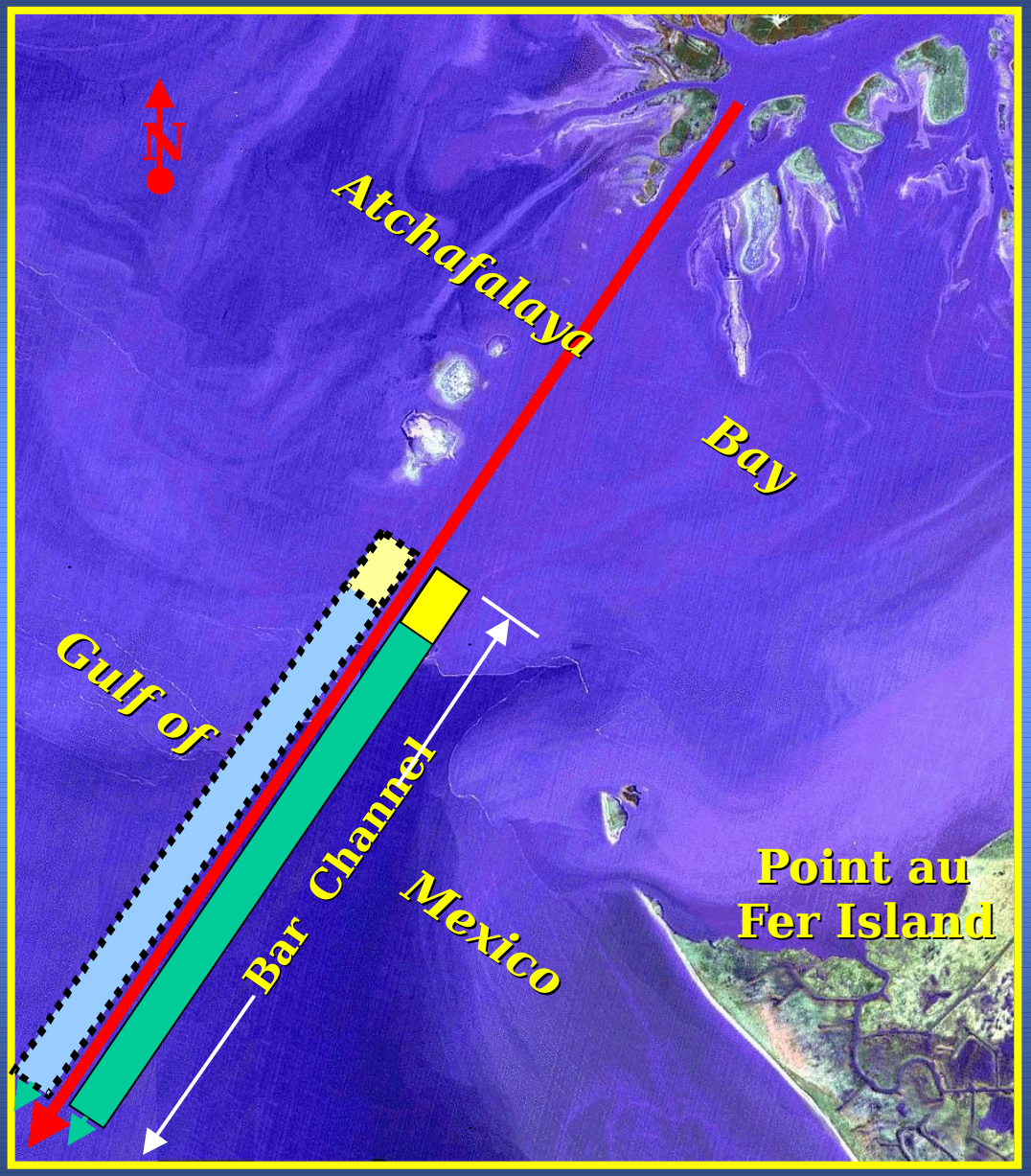
Objective:

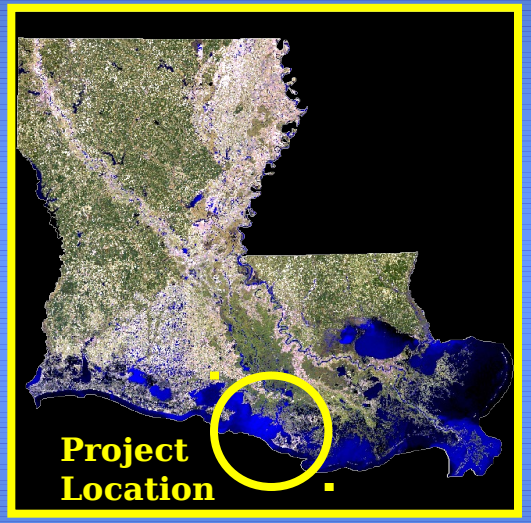
Move discharge of dredged material further away from the channel and relocate disposal to west side of channel to prevent runback of dredged material, caused by natural processes (littoral drift and weather events).

Result:

These measures delayed the return of fluff [illegible] was not significant relative to dep[illegible]i[illegible]

Lower Atchafalaya River Bar Channel





Navigational Channel

ODMDS (East Side)

Bird Island Disposal Ar

ODMDS (West Side)

Bird Island Disposal Area (West Side)

Activity 6:
Conducted Value Engineering (VE) Study.

Objective:
Identify innovative solutions for the fluff problem in the bar channel.

Result:
The VE team identified several alternatives (short term, pilot projects, studies) to address the fluff problem.

Used Fiscal Year (FY) 2004 funding to evaluate various VE alternatives. In FY 2004 completed preliminary evaluation of alternatives and selected three pilot projects for additional evaluation. (Parallel Channel, Cross Channel, and Sump). Completing evaluation process in FY 2005. Included $10,000,000 in FY 06 capabilities list to construct one of the pilot options if evaluation indicated alternative was promising.

Completing evaluation process in FY 2005. Included $10,000,000 in FY 06 capabilities list to construct one of the pilot options if evaluation indicated alternative was promising.

Preliminary Results VE Modeling

Cross Channels- Only 8 percent reduction in dredging quantities

Parallel Channel – Increased dredging to maintain parallel channels

Sediment Trap, Sump- Effective however shoaling rate 1.72 time the base condition making alternative impracticable

Preliminary Results 35 Feet Study

Activity 7:
Expanded the use of the densitune survey technology.

Objective:
Determine density of fluff throughout the thickness of the fluff layer.

Integrate densitune surveying with traditional hydrographic surveying.

Result:
Six densitune surveys have been performed. The top of fluff measured by traditional hydrographic surveys and by densitune surveys are similar. The integration of this new technology with traditional channel condition surveying

Activity 8:

Dustpan dredge Demonstration Project

Objective:

Determine if the Dustpan dredge is more effective at removing material/maintain channel than cutterhead dredge

Status:

BCOE of contract underway. This will be a sole source negotiation. Estimate work will be

Activity 9:
Analysis of Rotating Cutterhead

Objective:
Determine if cutterhead spin is contributing to fluff formation/residence in channel

Status:
Initial contact was made with consultant, need to develop scope and verify sole source service contract will be available

FUNDING FY 2004

FY 04 Expenditures	**$16,908,648**
Bay & Bar Dredging	$8,458,000
Bayou Chene Dredging	$3,925,000
Bar Channel Dredging	$2,925,000
Project Operations	$794,648
Channel Condition Surveys	$473,000
VE Evaluation	$207,000
VE Study	$126,000

FUNDING FY 05

FY 05
$29,358,000

Bar Dredging
$12,500,000

Bay
$4,500,000

Horseshoe
$5,200,000

O & M
$2,823,000

Channel Condition Surveys
$835,000

VE Evaluation

HOLSTEIN 16 May 2004 Vessel Draft 14 ‘

Mad Dog 12 July 2004 Vessel Draft 12’3”

SIMBA 14 July 2004 Emergency Sail in